

6. The method for manufacturing a semiconductor device of claim 5, wherein forming a first sub-plug comprises forming a first metal layer on the insulating layer having the contact hole therethrough and etching back the first metal layer to a predetermined depth to expose a void in the first metal layer, if any.

7. The method for manufacturing a semiconductor device of claim 5, wherein forming a second sub-plug comprises forming a second metal layer on the semiconductor substrate on which the first sub-plug has been formed and polishing the second metal layer so as to expose a top surface of the diffusion barrier layer on the insulating layer.

8. The method for manufacturing a semiconductor device of claim 6, wherein forming a second sub-plug comprises forming a second metal layer on the semiconductor substrate on which the first sub-plug has been formed and polishing the second metal layer so as to expose a top surface of the diffusion barrier layer on the insulating layer.

9. The method for manufacturing a semiconductor device of claim 5, wherein the first sub-plug is formed of tungsten.

10. The method for manufacturing a semiconductor device of claim 5, wherein the second sub-plug is formed of one of tungsten and titanium nitride.

11. The method for manufacturing a semiconductor device of claim 5, wherein the second sub-plug is formed to a thickness no greater than 1000 Å.

12. The method for manufacturing a semiconductor device of claim 5, wherein the diffusion barrier layer is formed of titanium/titanium nitride.

13. The method of claim 5, wherein the plug formed in the contact hole contacts a surface of the semiconductor substrate.

14. The method of claim 8, wherein the first metal layer is a metal layer capable of generating a void in the contact hole.

15. The method of claim 8, wherein the second metal layer is formed by atomic layer deposition.